

National Aeronautics and Space Administration

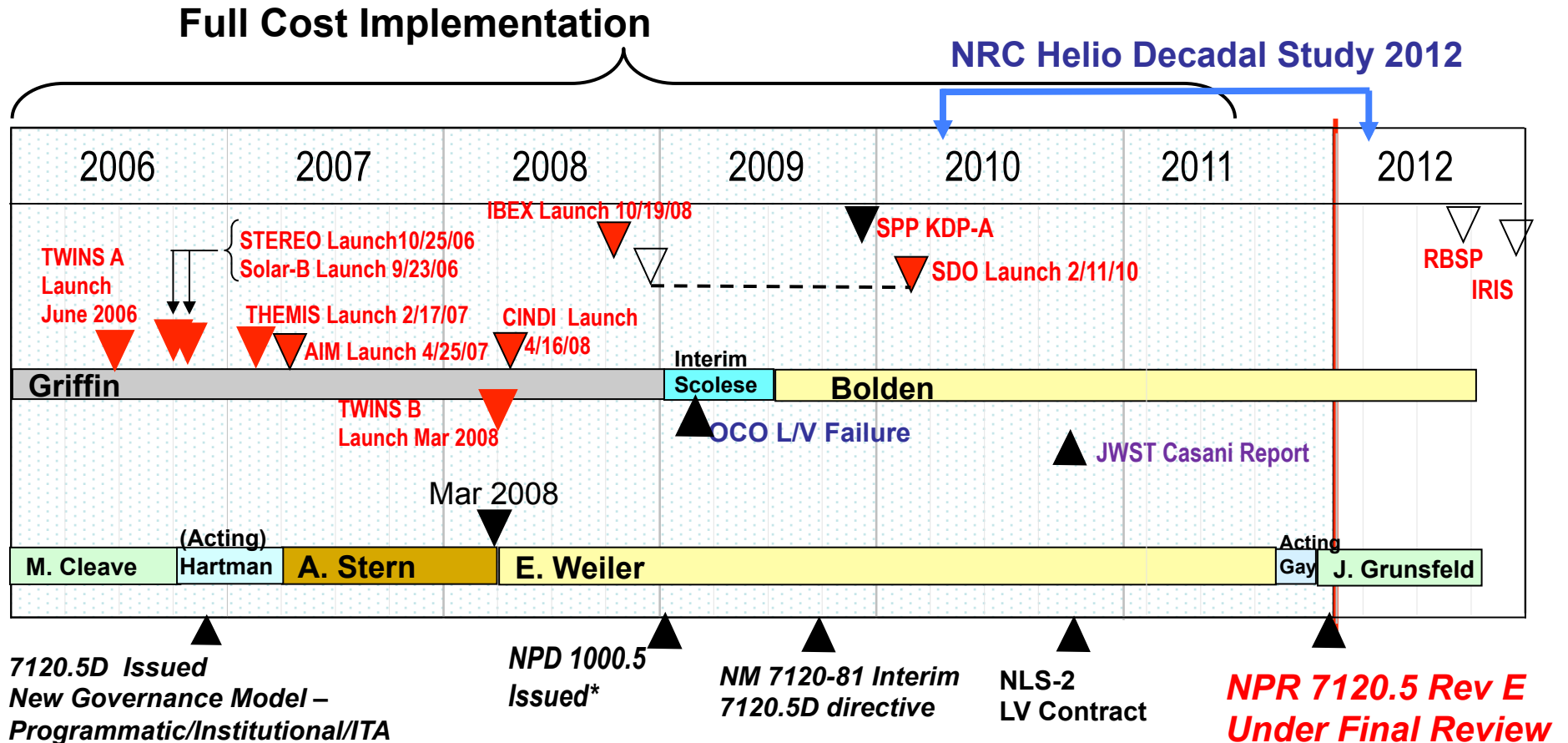


January 15, 2012

# Heliophysics

Presentation to  
Heliophysics Subcommittee  
February 27, 2012  
Vicki Elsbernd

# Timeline



\*NPD 1000.5 Policy (issued Jan 2009) for NASA Acquisition requires that Programs be budgeted at a 70% joint confidence level

# **NPR 7120.5 E**

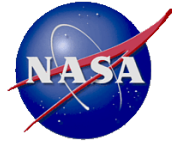
## **Background – Drivers for Change**

- Increased scrutiny with respect to project performance (cost/schedule)
- Culture that focuses on technical delivery – sometimes at the expense of meeting cost and schedule commitments
- Lock-in budget profile in the form of a range at KDP B, sometimes without sufficient understanding of risk
- Some projects are allowed to proceed to the next phase due to external pressures without having sufficient maturity
- Do not always document project decisions, agreements and direction
- Environment necessitates affordability, agility and efficiency without increased risk

***Improving program and project performance against internal and external commitments***

# Major Areas of Change – NPR 7120 NID/Rev E

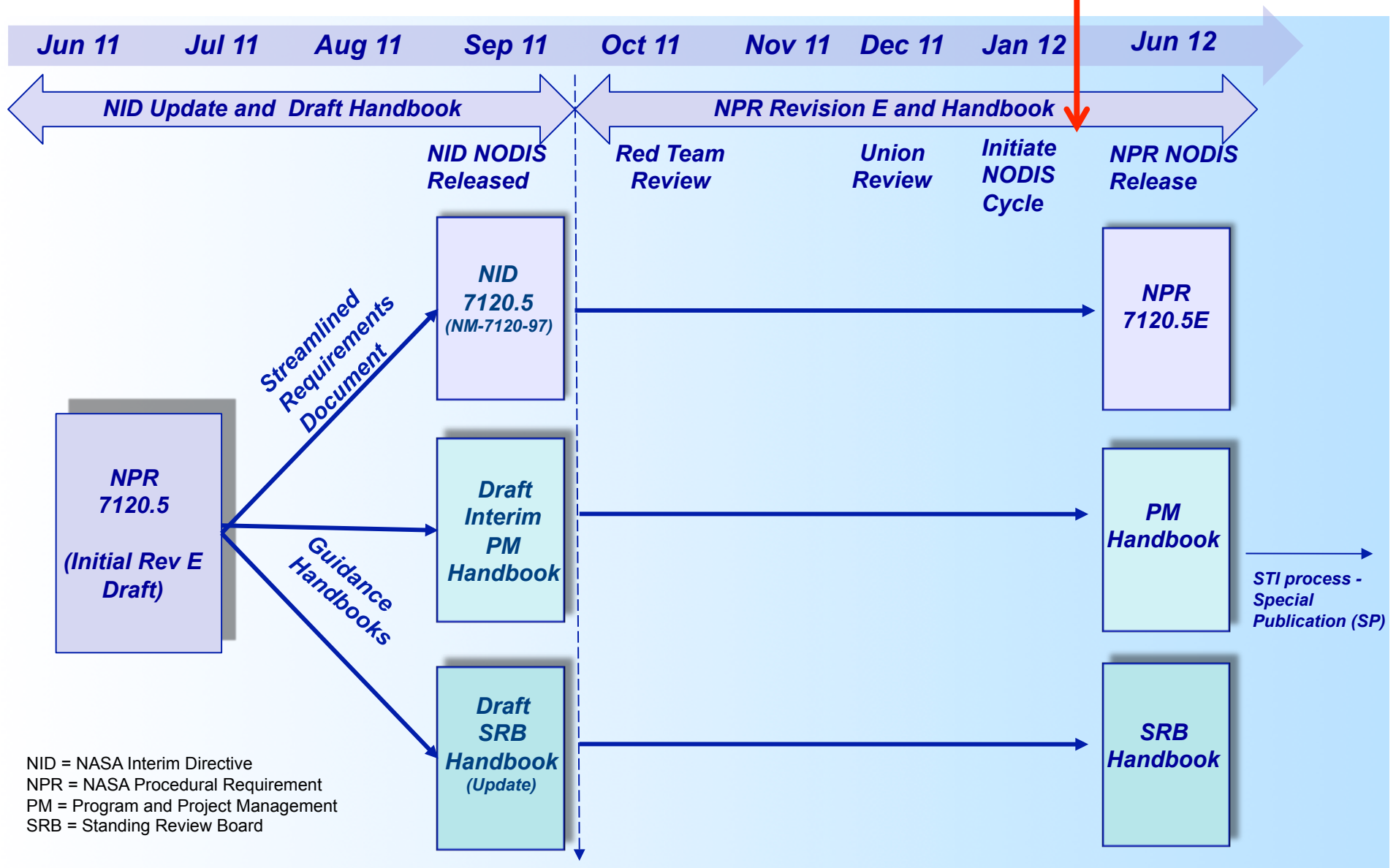
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- Tailoring
- Compliance Matrix
- Applicability
- Center documentation to implement 7120.5
- Maturity Matrices
- Formulation Agreement
- Baseline Policy
- Confidence Level and Joint Confidence Level
- EVM
- Role of Center Director
- Threat Assessment
- Industrial Base/Supply Chain Management
- Program Entrance to Implementation
- Engineering Technical Authority
- Integrated Center Management Council
- One-Step and Two-Step Life Cycle Review
- Terms of Reference Template



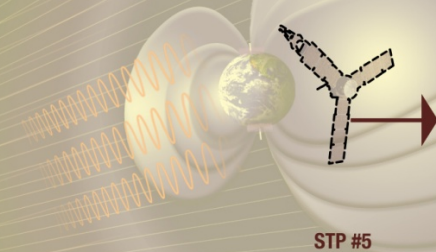
# 7120.5 - Schedule



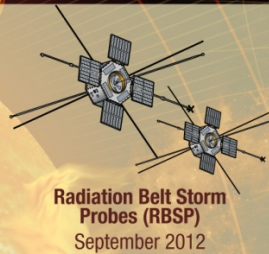
Handbooks available on the Other Policy Documents tab in the OCE section in the NODIS library

# Heliophysics Program 2012-2018

## Solar Terrestrial Probes



## Living With a Star



## Explorers



## Research Program



**CIBER** - February 2012  
**MICA** - February 2012  
**ATREX** - March 2012  
**FOXSI** - March 2012  
**FORTIS** - March 2012



**VESPR** - March 2012  
**IMAGER** - March 2012  
**HYPE** - April 2012  
**EVE Calibration** - May 2012

**VERIS** - May 2012  
**RAISE** - June 2012  
**RockOn** - June 2012  
**RockSat** - June 2012  
**HI-C** - July 2012

**SUMI** - July 2012  
**DFS** - July 2012  
**EUNIS** - August 2012  
**EVEX** - September 2012  
**Beasley** - October 2012

**Micro-X** - November 2012  
**XACT** - December 2012  
**DXL** - December 2012  
**ACCESS** - July 2013

**Sunrise** - June 2012/Sweden  
**ASTRA** - August 2012/New Mexico  
**NSCAP** - September 2012/New Mexico

**GRIPS** - September 2012/New Mexico  
**BARREL #1** - December 2012/Antarctica  
**BARREL #2** - December 2013

Ongoing

Heliophysics Missions  
Astrophysics Missions

2012

2013

2014

2015

2016

2017

2018

# Solar Terrestrial Probes Program



Project	Overall previous months				This Month					
	-4	-3	-2	-1	O	C	S	T	P	
<b><u>OVERALL</u></b>	G	G	G	G	G	G	Y	G	G	
<b>Magnetospheric Multiscale (MMS)</b> 8/14	G	G	G	G	G	G	Y	G	G	Working resolution on MMS and JWST ISIM conflict for use of GSFC SES. Decision targeted for March 2012. Working technical issues with FPI components.
<b>STP#5</b>	G	G	G	G	G	G	G	G	G	Decadal Survey sets science goal; competition schedule follows.

- **MMS Ground System CDR** (MOC at GSFC and POC, SOC at UC/LASP) successfully completed.
- **MMS EVM baseline replan** completed Feb 2012
  - OCE review of SwRI EVM processes conducted. SMD and OCE to be briefed in early March.

O: overall C: Cost, S: Schedule, T: Technical, P: Programmatic



On plan,  
adequate  
Margin\*\*



Problems, working  
to resolve within  
planned Margin\*\*



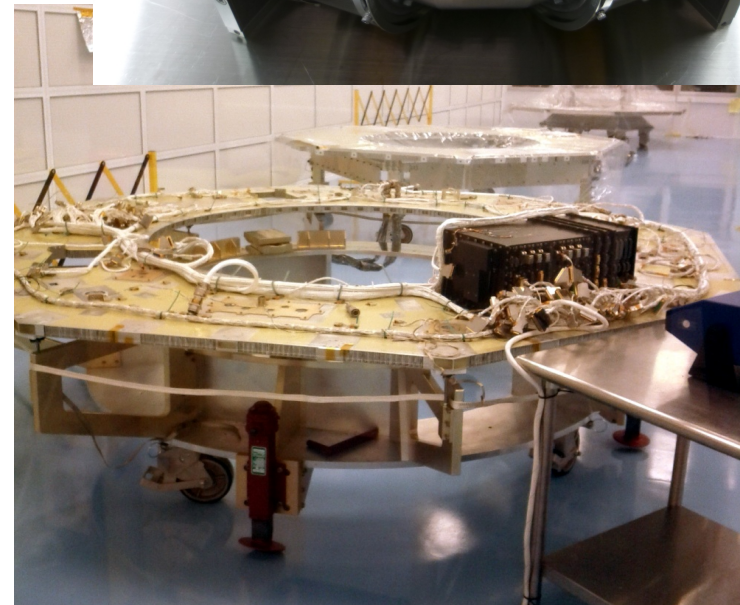
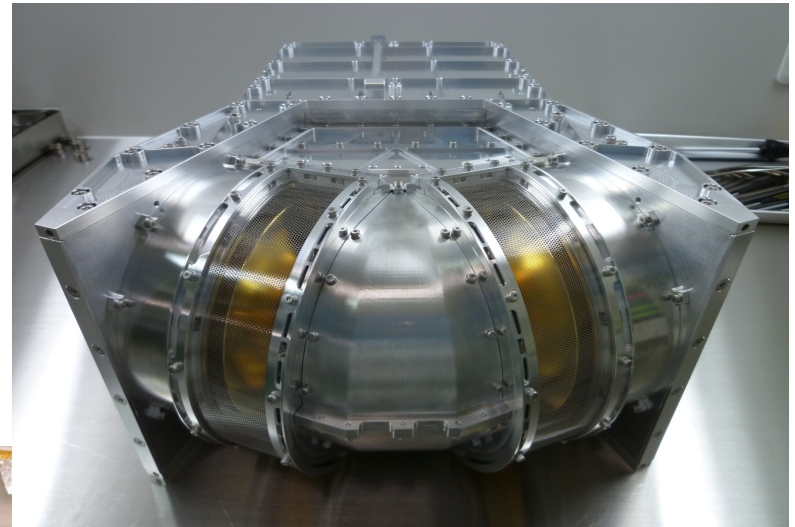
Problems, not  
enough margin  
to recover\*\*



## MMS Significant Accomplishments

- Integration of spacecraft bus #1 in progress
- PSR on Digital Sun Sensor FM#1, 2 successfully completed
- Instrument Suite deck #1, at SwRI, completed nitrogen purge start of flight harness installation
- Mag Boom QM successfully completed alignment and structural dynamics characterization
- ASPOC completed PSR and will ship March 2012 (2 of 8 FM from Austria)
- Delivery of FPI DIS from Japan to MSFC for calibration (2 of 16 FM)

**Mission SIR planned for August 27-30, 2012**



# Living with a Star Program



Project	Overall previous months				This Month					
	-4	-3	-2	-1	O	C	S	T	P	
<b><u>OVERALL</u></b>	G	G	G	G	G	G	G	G	G	
<b>RBSP 9/12</b>	G	G	G	G	G	G	G	Y	G	Working transceiver Avago amplifier parts failure. TVAC starts this week. 14 days slack to August 15, 2012 LRD.
<b>BARREL 2012</b>	G	G	G	G	G	G	G	G	G	
<b>SOC 2017</b>	G	G	G	G	G	G	G	G	G	
<b>SPP 2018</b>	G	G	G	G	G	G	G	G	G	Started Phase B on 02/01/2012
<b>SET-1 01/14</b>	G	G	G	G	G	G	G	G	G	At Kirtland AFB – launch delayed to 1/14 DMSP launch on demand.

- **BARREL:** Payload manufacturing, assembly & test making good progress. Required environmental assessment is being led by BARREL collaborators in South Africa with NSF's concurrence and WFF's assistance.
- **Solar Probe Plus:** Successful KDP-B on January 31, 2012; Phase B Kickoff meeting scheduled for March 8, 2012
- **Solar Orbiter Collaboration:** Formulation Agreement in concurrence; ESA MOU at ESA for signature; Quarterly ESTEC mtg.



# RBSP Significant Accomplishments

- MagEIS High units integrated onto both spacecraft
- Spacecraft thermal balance testing started last week
- Kickoff for ORR/PSR held Feb. 13



**Stack in Setup for Acoustic Test**



**Stack in Vibration Test**

Ship to KSC launch site planned in early May 2012



# Heliophysics Explorer Program



Project	Overall previous months				This Month					
	-4	-3	-2	-1	O	C	S	T	P	
<b><u>OVERALL</u></b>	G	G	G	G	G	Y	Y	G	Y	PCA/Prog Plan being updated
<b>IRIS 12/12</b>	G	R	Y	Y	Y	R	Y	G	G	Negative cost reserves. DPMC needed NLT June 2012. Schedule reserves – 18 days.
<b>EX/MO - next</b>	G	G	G	G	G	G	G	G	G	CSRs due September 2012 / Review planning underway

## Interface Region Imaging Spectrograph (IRIS)

- No major technical or risk concerns
  - Reaction wheel chipped magnet anomaly resolved. Failure of RWA LM139 quad comparator remains open
- EVM performance indices predict depletion of PI managed cost reserves before completion of project
- Schedule concerns exist due to delivery delays for IRIS flight components
  - Delays in Space Micro COMM system (now approaching critical pat

O: overall C: Cost, S: Schedule, T: Technical, P: Programmatic



On plan,  
adequate  
Margin\*\*

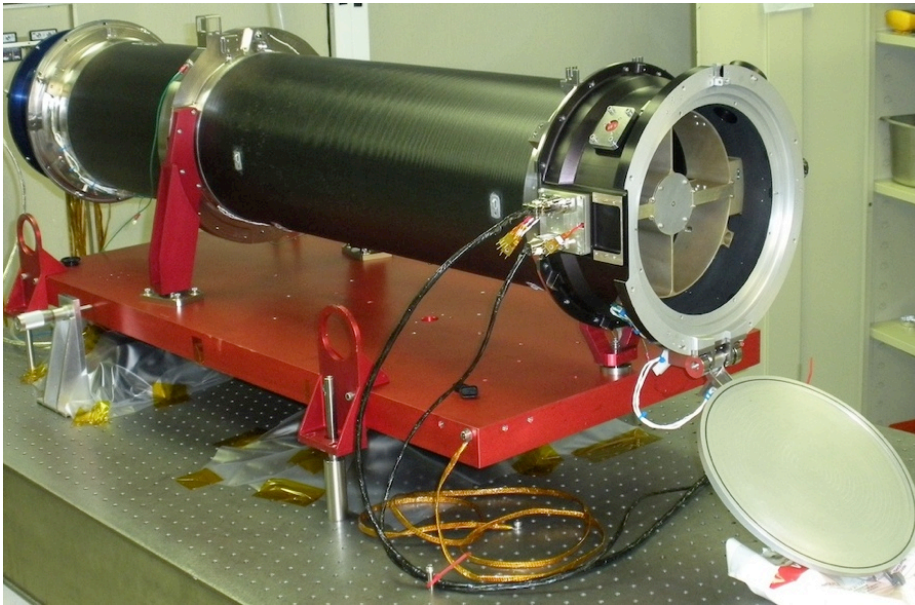


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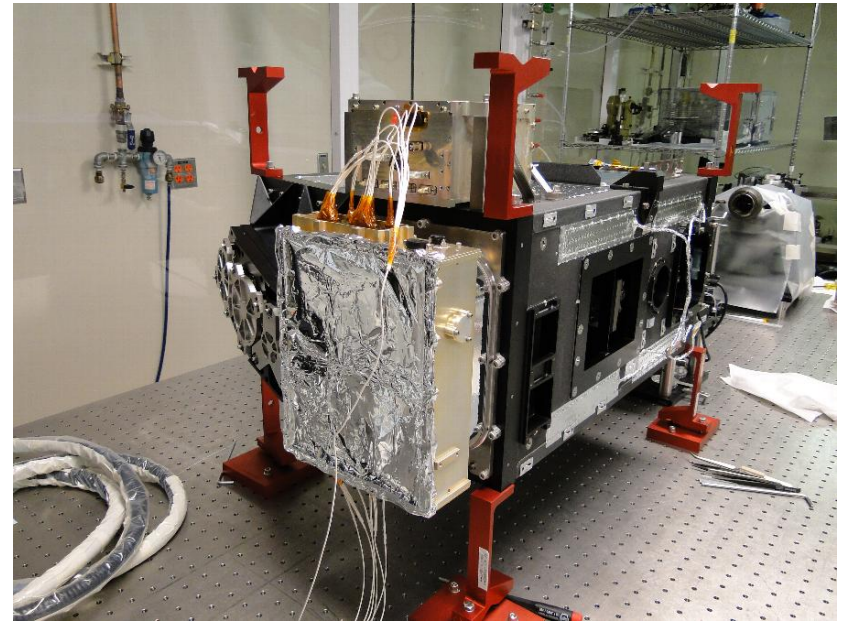


Problems, not  
enough margin  
to recover\*\*

# IRIS Significant Accomplishments



**Guide Telescope**



**Spectrograph**

- Cameras successfully powered on and images captured from the 4 CCDs.
- Spacecraft assembly underway (flight harnessing installed).
- Spectrograph has entered vacuum calibration testing.
- Mission Integration Working Group #4 was successfully completed.
- Successful science team modeling working group held at LMSAL with Co-I and international participation

**SIR targeted for May 2012**

## Heliophysics System Observatory (all green)

Mission	Launch	Phase	Extension to (*)	Sept	Oct	Nov	Dec	Remarks
Geotail	7/24/92	Extended	9/30/2014					
Artemis (Helio)	4/01/98	Extended	9/30/2014 (+)					
STEREO	10/25/06	Extended	9/30/2014					B lost 230 m on 1/26-27 & 2/1 due to downlink issues.
THEMIS	2/17/07	Extended	9/30/2014					
AIM	4/25/07	Extended	9/30/2014					over 70 days w/o bitlock. No issues.
Hinode	9/23/06	Extended	9/30/2014					
Cluster	7/16/00	Extended	9/30/2014 (+)					
ACE	8/27/97	Extended	9/30/2014					3 instruments' autonomy triggered due to X-class flare 1/27.
RHESSI	2/05/02	Extended	9/30/2014					Anneal cool-down started 1/31: continues for ~25 days.
SOHO	12/02/95	Extended	9/30/2014					
TIMED	12/07/01	Extended	9/30/2014					60 ft APL antenna work 1 month behind - due NET 3/1/12.
Voyager 1 + 2	8/20/77	Extended	9/30/2014					
TWINS A + B	6/06 & 3/08	Extended	9/30/2014					
CINDI:C/NOFS	4/16/08	Extended	9/30/2014					
IBEX	10/19/08	Extended	10/19/2012					Safeing (likely) caused by SEU on 2/6 - full recovery 2/12.
Wind	11/01/94	Extended	9/30/2014					
SDO	2/11/10	Prime	2/11/15					



Area of concern - possible reduction in capability



Significant problem - possible or probable loss of mission